PACIFIC METEOROLOGICAL COUNCIL

Pacific Islands Climate Services (PICS) Panel

Climate Services in the Pacific Islands Region: A Gap Analysis

Compiled by the Pacific Islands Climate Services (PICS) Panel

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Introduction

The Pacific Islands Climate Services (PICS) Panel was endorsed by the second Pacific Meteorological Council (PMC-2) in July 2013 and established in April 2014 at the Special Session of the Pacific Meteorological Council, in Rarotonga, Cook Islands.

The PICS Panel is an advisory group to the PMC, and aims to:

> *'Improve coordination, continuity and integration of projects, programmes and initiatives that support climate services at national, regional and global levels; strengthen the basic and core functions and capabilities of NMHSs for robust and sustained data collection and management, analysis of data and quality assurance, production and dissemination of products, research and modelling; and enhance avenues and modes of multi-way communication and feedback between climate services providers and users to enhance the uptake and use of relevant and tailored climate services down to the communities and individuals.'*

The first PICS Panel meeting was hosted by the Fiji Meteorological Service in August 2014. The Panel discussed a range of key issues to progress climate information and services in the Pacific. These discussions culminated in the development of a PICS Panel Action Plan and a list of Priority Actions and Recommendations (see Appendix 1), to assist the Panel in providing advice to the PMC on climate services development in the region.

One of the Priority Actions was to compile a Gap Analysis of Climate Services in the Pacific Region, based on existing resources. Two primary questions were to be addressed in the analysis. These are:

- What climate services are currently being provided in the region?
- What is the minimum set of services that are needed in the region?

Resources

The following resources were used to compile this report:

- WMO RA-V Working Group on Climate Services (WGCS) questionnaire on agro-climatic services;
- WMO RA-V WGCS questionnaire on capabilities and needs for a Regional Climate Centre (RCC);
- Pacific Regional Implementation Roadmap for strengthened climate services – an output of the Regional Consultation on Climate Services for Pacific Small Island Developing States (SIDS) in Rarotonga, Cook Islands, in March 2014;
- Regional expert roundtable on climate services for agriculture and food and nutrition security (Samoa, Feb 2015);
- NOAA Pacific ENSO Applications Center Pacific Islands climate services dialogues;
- WMO mandatory and highly recommended functions for a RCC; and
- Group discussion at the Second Meeting of the PICS Panel, Samoa, May 2015.

Summary of climate services currently being provided

The following key points summarise the level of climate services currently being provided in the Pacific Islands region:

- There is a wide range in the level of climate services provided in the region which is strongly related to the number of staff and financial resources of each NMHS (see Table 1);
- All countries are providing at least a basic level of climate service that includes data provision, summary statistics, and climate outlooks;
- Extended services include specific data analyses and reports, long-range warnings and watches (e.g. for TC, drought, sea level and coral bleaching risk), ENSO updates, and climate change information;
- Many countries have good internet pages which are kept regularly updated;
- Most countries have established good relationships with key stakeholders (e.g. Agriculture, Fisheries, DMO, Water Resources, tourism operators), but these could be strengthened; and
- All countries are actively and frequently disseminating climate information (particularly monthly summaries and seasonal outlooks) via multiple mechanisms to multiple users, who all value the service.

Table 1: Number of climate staff and number of rain gauges and climate stations (total, and in agricultural regions), for several countries in the Pacific Islands and surrounding region. NR = information not reported. Source: *WMO RA-V Working Group on Climate Services (WGCS) questionnaire on agro-climatic services [data compiled over the period 2012-2014]*.

Country	Number of staff providing climate services	Number of rain gauges (total, ag. areas)	Number of climate stations (total, ag. areas)
Australia	~53	~5400, ~1960	~191, NR
Cook Islands	9	15, most of them	5, most of them
Fiji	8	40, most of them	22, NR
FSM: Chuuk	5	11 (not differentiated), 0	
FSM: Pohnpei	8	9 (not differentiated), 0	
Indonesia	60	~6000 (not differentiated), NR	
Kiribati	3	18, 0	5, 0
New Zealand	20	~500, ~450	~150, ~130
Niue	4	0, 0	1, 0
Papua New Guinea	8	~50, NR	~21, ~5
Samoa	10	42 (all in villages)	30, 3
Singapore	20	28, NR	1, 1
Solomon Islands	6	30, most of them	5, most of them
Tonga	4	6, NR	6, NR
Vanuatu	6	91, 84	3, NR

Gaps and needs identified

The following climate services gaps and needs have been identified, for the Pacific Islands region:

- There is little or no feedback from users on how seasonal forecasts are being / could be used in decision making;
- There is a lack of awareness programs regarding the usefulness of climate information;
- There is a lack of understanding or training of climate for agriculture staff especially those who are out in the field with the farmers;
- There are not enough climate observation sites (or they do not provide real-time and accurate data), especially in rural areas;
- There is a need to develop more tailored / simplified products;
- There is a need more manpower / funding / training / equipment;
- There is a need for more research on the impacts of large-scale atmospheric/oceanic drivers/processes on the climate in the region (ENSO, IOD, MJO, etc.) on various timescales (including two-weekly and monthly);
- There is a need for more ways of communicating information (more than email and few face-to-face meetings). Could use SMS, for example. Weather forecasts are now using "SmartMet" which could be adapted for climate information;
- More use could be made of GIS data/maps to show current conditions and the difference from normal;
- There is a need for more personal interaction / briefings with key end users (e.g. national Climate Outlook Forums (NCOFs), National Climate Forums (NCFs), video briefings, partnerships); and
- There is a need for established pathways for the flow of information (i.e. data, products, services, and advice). For example, see Figure 1.

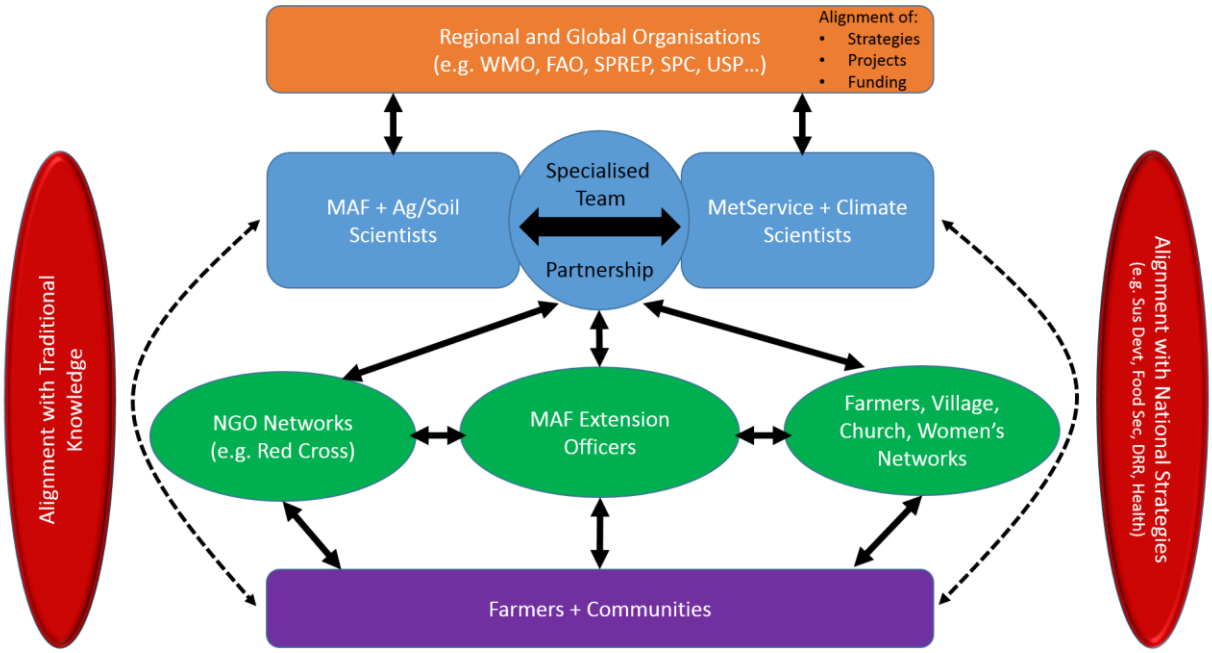

Figure 1: Conceptual information flow model. Source: *Regional Expert Roundtable on Climate Services for Agriculture and Food and Nutrition Security, Apia, Samoa, February 2015*.

Minimum required climate services

Based on this gaps analysis, it is recommended that National Meteorological and Hydrological Services (NMHSs) in the Pacific Islands region provide the following minimum climate services:

- Real-time data collection, storage and quality assurance;
- Rescue and digitisation of historic data;
- Up-to-date summary statistics (e.g. monthly reporting on temperature, rainfall, wind, sunshine, sea surface temperature (SST), and extreme events);
- Up-to-date country-level climatologies (based on the 30-year standard climatological normal period 1981-2010);
- Regular 3-month climate outlooks (including temperature, rainfall, and SST);
- Regular dissemination of climate data and information (via phone, webpages, email, media briefings, etc.); and
- Regular national climate fora (e.g. NCOFs), including the garnering of feedback on the value of climate information.

Desirable extended services

It is also recommended that, where possible, the following extended services should be provided (noting that some of these extended services are already being provided in some countries):

- Specific and tailored data analyses and reports (based on end-user requests);
- Climate data homogenisation;
- Regular reporting of sea level information (from tide gauges);
- Long-range warnings and watches (e.g. for Tropical Cyclones, drought, sea level and coral bleaching risk);
- ENSO updates (including the current and forecasted location of the South Pacific Convergence Zone).
- Assessments of accuracy of 3-month outlooks (including model diagnostics);
- Production of climate maps (including GIS datasets) and charts in real-time;
- Summary reports of weather- and climate-related impacts;
- Publication of satellite-based gridded rainfall products;
- Production of user-specified tailored products (e.g. maps of fire risk, disease risk);
- Climate change assessment information (based on IPCC AR5) and exploratory tools (e.g. *Pacific Climate Futures*);
- Links to and use of web-based tools (e.g. *Clidesc*, *Pacific Climate Change Portal*, *PaCIS Dashboard*, *COSPPac Ocean Portal*); and
- Greater utilisation of social media (e.g. Facebook).

Disclaimer

This report has been prepared by the PICS Panel based on an assessment of published and unpublished literature and from one-on-one and group discussions. The information in this report is provided on a best endeavour basis. Neither the PICS Panel nor the PMC shall be held accountable for the accuracy or use of the information in this report.

Appendix 1: Priority PICS Panel Actions and Recommendations

The following Priority Actions have been drawn from the PICS Panel Action Plan:

	Priority Actions	**Timeline**	**PICS Panel task leader**
1	Plan for and hold the first Pacific Islands Regional Climate Outlook Forum (RCOF) including a water resources sector focus	October 2015	Janita Pahalad, BoM
2	Conduct a gap analysis based on what climate services are currently being provided and the minimum set of services that are needed	Dec 2014	Andrew Tait, NIWA
3	Review the structure, maintenance and use of the SPREP regional projects database and report to PMC	July 2015	John Marra, NOAA
4	Draft an RA-V RCC-Network Implementation Plan, to be submitted to the RA-V Management Group	May 2015	Andrew Tait, NIWA
5	Review international standards on qualifications and competencies for climate services and delivery and potential adaptation of them for the Pacific Region	October 2015	Elisabeth Holland, USP

The following Priority Recommendations have been drawn from the PICS Panel Action Plan:

	Priority Actions	**Timeline**	**Recommended lead agency**
1	Review the Pacific Islands Meteorological Strategy (PIMS) in relation to the WMO RA-V strategic and operational plan, the PICS Panel Action Plan, and regional sector strategies (e.g. water, agriculture, DRR, health, etc.)	August 2015	SPREP
2	Review national strategies for delivering climate services (e.g. the establishment/formalization of National Climate Outlook Forums, NCOFs)	August 2015	All NHMSs
3	Identify countries that would like to/need to develop a national drought policy and make use of the WMO Integrated Drought Management Programme (IDMP)	May 2015	WMO
4	List all non-functional observing stations and necessary IT equipment (i.e. on outer islands)	May 2015	SPREP
5	Establish a Regional Training Centre for the Pacific Islands (this is a longer-term goal, but requires staged planning and interim goals)	August 2017	USP and WMO